

Remarks

Claim 1 has been amended to (1) specify that the substrate is an automotive part. Claim 14 has been canceled, and claim 15 has been amended to change its dependency.

Support for the amendment to claim 1 is found in original claim 14.

Regarding the 102 rejections over the Lekovic applications and patent (WO 02/079340, US 2003/0018096 and US 6,803,390)

All three of these references have the same disclosure. For convenience, reference will be made to the US patent.

The claims in this application require that the blowing agent is a carbamate of an alkanolamine.

The references do not describe any carbamate of an alkanolamine, and therefore do not anticipate the present claims.

US 6,803,390, at column 7 lines 44-52 states: "The polyol component also contains a blowing agent . . . the preferred blowing agents are materials such as formate-blocked amines and water. The formate-blocked amines decompose under the foaming conditions to form carbon dioxide. . . ."

At column 8, lines 23-29, US 6,803,390 states: "All of these preferred polyol mixtures are preferably formulated into a polyol component that includes water and/or CO₂-producing chemical blowing agents and a reactive amine catalyst. Note that certain blocked amines, such as formic-acid blocked amine will perform the function of catalyzing the reaction as well as acting as a blowing agent through the generation of CO₂."

The quoted statements are believed to constitute the entire general teachings of US 6,803,390 (and its cited counterparts) regarding blocked amine blowing agents. Neither of these statements mentions, explicitly or inherently, a carbamate of an alkanolamine.

Examples 1B and 2B of US 6,803,390 each describe a "formic blocked amine catalyst" which is identified as DABCO 8154, from Air Products. Dabco 8154 is the only "formic acid blocked amine catalyst" specifically mentioned in the reference. Dabco 8154 is a formic acid-blocked 1,4-diazabicyclo[2.2.2]octane (i.e., triethylene diamine). A copy of the manufacturer's product literature is enclosed to support this point. 1,4-Diazabicyclo[2.2.2]octane is not an alkanolamine, and further goes to show that by

describing a “formic blocked amine catalyst”, US 6,803,390 is not inherently disclosing a carbamate of an alkanolamine.

Because none of the Lekovic references describes any carbamate of an alkanolamine, they do not anticipate the claims of this application.

Regarding the §103(a) rejection of claims 1-9, 11-13 and 15-16 over Rotermund and Guidetti

This rejection is respectfully traversed.

In the present invention, a rigid polyurethane foam is formed to an automotive part, using a foam formulation that includes as a blowing agent a carbamate of an alkanolamine.

The primary reference, Rotermund (US 6,284,812) is concerned with rigid foam mainly for pipe insulation. Rotermund's foams must have high heat resistance combined with low brittleness and low thermal conductivity even at high temperatures. Col. 2 lines 17-19. The point of the Rotermund reference is that this combination of features was not commonly achieved in the prior art. Rotermund achieves these goals through a specific mixture of polyether and polyester polyols, together with a specific mixture of blowing agents (water and a physical blowing agent). That blowing agent mixture is, specifically, water, and a “physically acting blowing agent composed of the elements carbon and hydrogen and/or of the elements carbon, hydrogen and fluorine, both of which must be present in specified amounts. (A foam (Ex. 21) made using only water as the blowing agent is explicitly identified as “comparative” by Rotermund.) One of skill in the art would recognize “physically acting” blowing agents as being those which produce a gas by volatilizing, rather than engaging in a chemical reaction (as do Guidetti's carbamates).

Rotermund therefore fails to disclose any blowing agents that are carbamates of an alkanolamine. Instead the examiner relies on Guidetti for its teaching of that class of blowing agents.

Guidetti does not relate to pipe insulation or even to rigid polyurethane foams. The only polyurethanes Guidetti specifically describes are elastomeric materials, i.e., rubbers. Guidetti describes applications such as carpets, door seals, coating, tires, wiper blades, steering wheels, gaskets, belts, panels and shoe soles (col. 9 lines 22-51), all of which are obviously rubbery materials. These typically have a Shore A hardness of from 20A to 80A (col. 7 lines 33-35), which is indicative of a soft, rubbery material. These materials are not rigid polyurethane foams of the type described by Rotermund. There is nothing whatsoever in Guidetti, other than the mere fact that the carbamate blowing agents can produce gas by

reacting with a polyisocyanate, which suggests that the carbamates would have any application in making rigid foam useful for pipe insulation, as taught by Rotermund.

Therefore, except with benefit of applicant's teaching, one of ordinary skill in the art would not have any reason to modify Rotermund using Guidetti's teachings. The applications in the two references are very different, and Rotermund is very specific about requiring both water and certain physical blowing agents in his formulation (neither of which is a carbamate of any kind), in conjunction with other specific components, in order to attain the specific set of properties he needs for his pipe insulation application. If, as the examiner suggests, the change in blowing agents is obvious, then which of Rotermund's blowing agents could be replaced with the carbamate, while still meeting Rotermund's requirement that the foam have a high heat resistance combined with low brittleness and low thermal conductivity even at high temperatures? Would it be the water, the physical agent, or both that is replaced with the blocked carbamate? And what reason would a skilled artisan have to consider "abrasion resistance" as a motivation to use Guidetti's blowing agents in Rotermund's application, when Rotermund's stated concerns are heat resistance, brittleness and thermal conductivity? Why would one of skill in the art have an "expectation of success", when Guidetti teaches nothing that would suggest that the use of carbamate blowing agents would have any beneficial effect at all with regard to the properties Rotermund deems important.

In addition, applicants further note that neither of the cited references pertain to applying a foam to a vehicular part or assembly, as the amended claims now require.

Regarding the §103(a) rejection of claims 6, 7, 8 and 10 over Rotermund, Guidetti and WO 02/078340

This rejection relies on Rotermund and Guidetti as before, with the addition of WO 02/078340 for its teachings concerning amine-terminated polyethers (present claim 10), hydroxyl-functional (meth)acrylate terminated prepolymers (present claim 7) and plasticizers (present claim 8). However, WO 02/078340 does not describe any carbamates of an alkanolamine as a blowing agent. WO 02/078340 therefore fails to cure the basic deficiencies of the combination of Rotermund and Guidetti.

Regarding the Obviousness-Type Double Patenting Rejection over US 6803390

A terminal disclaimer with respect to US 6803390 accompanies this response. By submitting the terminal disclaimer, applicants do not admit the substance of the double patenting rejection.

Regarding the Provisional Obviousness-Type Double Patenting Rejection

The obvious-type double patenting rejection over copending application 11/403,658 alone or in view of WO 02/079340 is noted. As noted by the examiner, the rejection is provisional because the claims in the other case have not yet been patented, and no claims are as yet indicated by the Office as being in condition for allowance. Applicants stand ready to file a terminal disclaimer in this case or in 11/403,658 when allowable subject matter is indicated in at least one of the cases, if the office still considers the obviousness-type double patenting rejections to be appropriate given the foregoing claim amendments and any further amendments that subsequently may be made in either of the two cases.

Respectfully submitted,
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